

Exhibit 26

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Technical Specification

3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; IP Multimedia (IM) Subsystem Cx and Dx interfaces; Signalling flows and message contents (Release 6)



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Table 6.1.2.2: S-CSCF registration/deregistration notification response

Information element name	Mapping to Diameter AVP	Cat.	Description
Private User Identity / Private Service Identity (See 7.3 and 7.3a)	User-Name	C	<p>Private Identity.</p> <p>It shall be present if it is available when the HSS sends the response.</p> <p>It may be absent in the following error case: when the Server-Assignment-Type of the request is UNREGISTERED_USER and the received Public Identity is not known by the HSS.</p>
Registration result (See 7.6)	Result-Code / Experimental-Result	M	<p>Result of registration.</p> <p>Result-Code AVP shall be used for errors defined in the Diameter Base Protocol.</p> <p>Experimental-Result AVP shall be used for Cx/Dx errors. This is a grouped AVP which contains the 3GPP Vendor ID in the Vendor-Id AVP, and the error code in the Experimental-Result-Code AVP.</p>
User Profile (See 7.7)	User-Data	C	<p>Relevant user profile.</p> <p>It shall be present when Server-Assignment-Type in the request is equal to NO_ASSIGNMENT, REGISTRATION, RE_REGISTRATION or UNREGISTERED_USER according to the rules defined in section 6.6.</p> <p>If the S-CSCF receives more data than it is prepared to accept, it shall perform the de-registration of the Private Identity with Server-Assignment-Type set to Deregistration_TOO MUCH_DATA and send back a SIP 3xx or 480 (Temporarily Unavailable) response, which shall trigger the selection of a new S-CSCF by the I-CSCF, as specified in 3GPP TS 24.229 [8].</p>
Charging Information (See 7.12)	Charging-Information	C	<p>Addresses of the charging functions.</p> <p>It shall be present when the User-Data AVP is sent to the S-CSCF.</p> <p>When this parameter is included, either the Primary-Charging-Collection-Function-Name AVP or the Primary-Event-Charging-Function-Name AVP shall be included. All other elements shall be included if they are available.</p>
Associated Private Identities	Associated-Identities	O	<p>This AVP contains all Private Identities, which belong to the same IMS subscription as the Private Identity or Public Identity received in the SAR command.</p> <p>If the IMS subscription contains only single Private Identity this AVP shall not be present.</p>

6.1.2.1 Detailed behaviour

On registering/deregistering a Public Identity the S-CSCF shall inform the HSS. The same procedure is used by the S-CSCF to get the user information which contains the user profile and the charging information. The relevant user profile downloaded is described in more detailed in sections 6.5.1 and 6.6. The Public-Identity AVP and User-Data AVPs in this command pair shall contain only one type of identities i.e. either only Public User Identities, or only Public Service Identities. The HSS holds information about the state of registration of all the identities related to an IMS Subscription. The S-CSCF uses this procedure to update such states. For Shared Public User Identities, the S-CSCF shall initiate this procedure towards the HSS for each Private User Identity undergoing a Registration or Deregistration related to the Shared Public User Identity. For implicitly registered identities, the rules defined in Section 6.5.1 shall apply. The HSS shall, in the following order (in case of an error in any of the steps the HSS shall stop processing and return the corresponding error code, see 3GPP TS 29.229 [5]):

1. Check that the Public Identity and Private Identity exist in the HSS. If not Experimental-Result-Code shall be set to DIAMETER_ERROR_USER_UNKNOWN.

2. The HSS may check whether the Private and Public Identities received in the request are associated in the HSS. If not Experimental-Result-Code shall be set to DIAMETER_ERROR_IDENTITIES_DONT_MATCH.
3. If more than one Public-Identity AVP is present and the Server-Assignment-Type is one of the values defined in Table 6.1.2.1 as applying for only one identity, then the Result Code shall be set to DIAMETER_AVP_OCCURS_TOO_MANY_TIMES and no user information shall be returned.
4. If the identity in the request is a Public Service Identity, then check if the PSI Activation State for that identity is active. If not, then the response shall contain Experimental-Result-Code set to DIAMETER_ERROR_USER_UNKNOWN.
5. Check the Server Assignment Type value received in the request:
 - If it indicates REGISTRATION or RE_REGISTRATION, the HSS shall download the relevant user information. If the Public User Identity's authentication pending flag which is specific for the Private User Identity is set, the HSS shall clear it. The Result-Code shall be set to DIAMETER_SUCCESS and the HSS shall set the registration state of the Public User Identity as registered (if not already registered). If there are multiple Private User Identities, which belong to the served IMS subscription the Associated-Identities AVP should be added to the answer message and it shall contain all Private User Identities associated to the IMS subscription.
 - If it indicates UNREGISTERED_USER, the HSS shall store the S-CSCF name, set the registration state of the Public Identity as unregistered, i.e. registered as a consequence of a terminating call and download the relevant user information. If there are multiple Private User Identities associated to the Public User Identity in the HSS, the HSS shall arbitrarily select one of the Private User Identities and put it into the response message. The Result-Code shall be set to DIAMETER_SUCCESS. If there are multiple Private User Identities, which belong to the served IMS subscription the Associated-Identities AVP should be added to the answer message and it shall contain all Private User Identities associated to the IMS subscription.

If the HSS sends a Wildcarded PSI in the response, the S-CSCF may do the wildcard matching using the wildcarded PSI received in this first Server-Assignment-Answer and omit the Server-Assignment-Request for subsequent requests matching the same Wildcarded PSI.

- If it indicates TIMEOUT_DEREGISTRATION, USER_DEREGISTRATION, DEREGISTRATION_TOO MUCH_DATA or ADMINISTRATIVE_DEREGISTRATION, the HSS shall check the registration state for all the Public Identities in the request. If the request did not contain Public Identities the HSS shall check the registration state of the Public Identities associated with the Private Identity identified in the request. For each Public Identity;
 - if the registration state of the Public User Identity is Registered, the HSS shall check if the Public User Identity is currently registered with one or more Private User Identities.
 - If the Public User Identity is currently registered with only one Private User Identity, the HSS shall set the registration state of the Public User Identity to Not Registered and clear the S-CSCF name associated with the Public User Identity.
 - If the Public User Identity is currently registered with more than one Private User Identity, the HSS shall keep the registration state of the Public User Identity as Registered and retain the S-CSCF name associated with the Public User Identity.
 - if the registration state of the Public Identity is Unregistered, the HSS shall set the registration state of the Public Identity to Not Registered and clear the S-CSCF name associated with the Public Identity.

The Result-Code shall be set to DIAMETER_SUCCESS

- If it indicates TIMEOUT_DEREGISTRATION_STORE_SERVER_NAME or USER_DEREGISTRATION_STORE_SERVER_NAME the HSS decides whether to keep the S-CSCF name associated to the Private User Identity stored or not for all the Public User Identities that the S-CSCF indicated in the request. If no Public User Identity is present in the request, the Private User Identity shall be present.
 - If the HSS decides to keep the S-CSCF name stored the HSS shall keep the S-CSCF name stored for all the Public User Identities associated to the Private User Identity. The Result-Code shall be set to DIAMETER_SUCCESS.

6.5.1.1 Registration

The notification of a registration of a Public User Identity implies the registration of the corresponding implicitly registered Public User Identity set. The user information downloaded in the response contains the Public User Identities of the implicitly registered Public User Identity set with the associated service profiles. This allows the S-CSCF to know which Public User Identities belong to the implicitly registered Public User Identity set. The S-CSCF shall take from the set of implicitly registered Public User Identities the first identity which is not barred, and use this as the default Public User Identity.

6.5.1.2 De-registration

The de-registration of a Public User Identity implies the de-registration of the corresponding implicitly registered Public User Identity set, both in the HSS and in the S-CSCF. The S-CSCF shall include in the request a single Public User Identity to deregister all the Public User Identities that belong to the corresponding implicitly registered Public User Identity set.

The de-registration of a Private User Identity implies the de-registration of all the corresponding Public User Identities, both in the HSS and in the S-CSCF.

6.5.1.3 Authentication

Setting the authentication pending flag for a Public User Identity implies setting the authentication pending flag for each corresponding implicitly registered Public User Identity in the HSS.

6.5.1.4 Downloading the user profile

If the S-CSCF requests to download a user profile from HSS, the user profile in the response shall contain the Public User Identities of the corresponding implicitly registered Public User Identity set with the associated service profiles.

6.5.1.5 Initiation of a session to a non-registered user

The change of a Public User Identity to the Unregistered state due to the initiation of a session to a Public Identity that was in Not Registered state and the opposite change from Unregistered state to Not Registered state implies the same change for all the Public User Identities in the same Implicit Registration Set.

6.5.2 HSS initiated procedures

6.5.2.1 Update of User Profile

A request sent by the HSS to update the user profile shall include only the Public User Identities of the implicitly registered Public User Identity set, with the associated service profiles (even if not updated). If other Public User Identities not associated with the implicitly registered Public User Identity set are affected, they shall be downloaded in separate commands.

This procedure shall be used by the HSS to add a newly provisioned or Not Registered Public User Identity or Identities to an existing implicitly registered Public User Identity set that is in the state Registered or Unregistered. The added Public User Identity gets the registration state of the set it is added to.

The HSS shall use this procedure if a Public User Identity or Identities are removed from the implicitly registered Public User Identity set that is in a state Registered or Unregistered. In practise, this is done by sending a PPR for the set without the removed identities. The S-CSCF shall remove all information stored in the S-CSCF for the removed identities.

The HSS shall not use this procedure if there is no Public User Identities left in the implicitly registered Public User Identity set after the removal. In that case HSS shall use the RTR command instead.

The HSS shall not use this procedure to change the default Public User Identity of the implicitly registered Public User Identity set that is in a state Registered. In that case the HSS shall use the RTR command to de-register the Public User Identity set.

Annex B (informative): User profile UML model

The purpose of this UML model is to define in an abstract level the structure of the user profile downloaded over the Cx interface and describe the purpose of the different information classes included in the user profile.

B.1 General description

The following picture gives an outline of the UML model of the user profile, which is downloaded from HSS to S-CSCF:

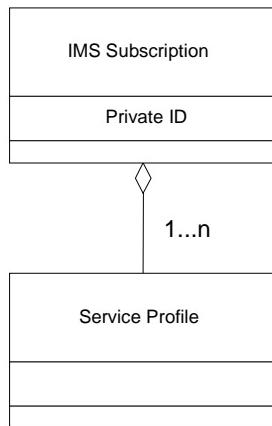


Figure B.1.1: User Profile

IMS Subscription class contains as a parameter the private user identity of the user in NAI format.

Each instance of the IMS Subscription class contains one or several instances of the class Service Profile.

B.2 Service profile

The following picture gives an outline of the UML model of the Service Profile class:

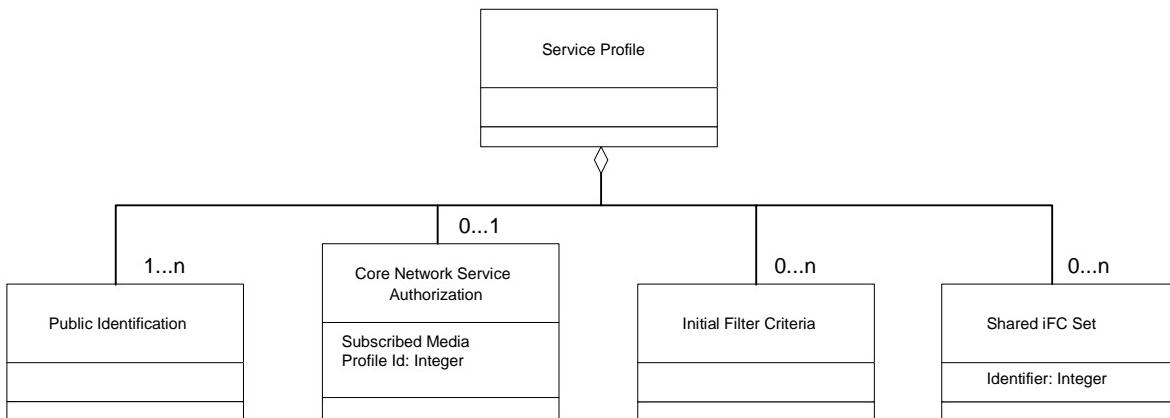


Figure B.2.1: Service Profile

Each instance of the Service Profile class consists of one or several instances of the class Public Identification. Public Identification class contains the Public Identities associated with that service profile. The information in the Core

Network Service Authorization, Initial Filter Criteria, and Shared iFC Set classes apply to all Public Identification instances, which are included in one Service profile class.

Each instance of the Service Profile class contains zero or one instance of the class Core Network Service Authorization. If no instance of the class Core Network Service Authorization is present, no filtering related to subscribed media applies in S-CSCF.

Each instance of the class Service Profile contains zero or several instances of the class Initial Filter Criteria.

Each instance of the class Service Profile contains zero or more instances of the class Shared iFC Set. A Shared iFC Set points to a set of Initial Filter Criteria locally administered and stored at the S-CSCF. Shared iFC Sets may be shared by several Service Profiles.

B.2.1 Public Identification

The following picture gives an outline of the UML model of Public Identification class:

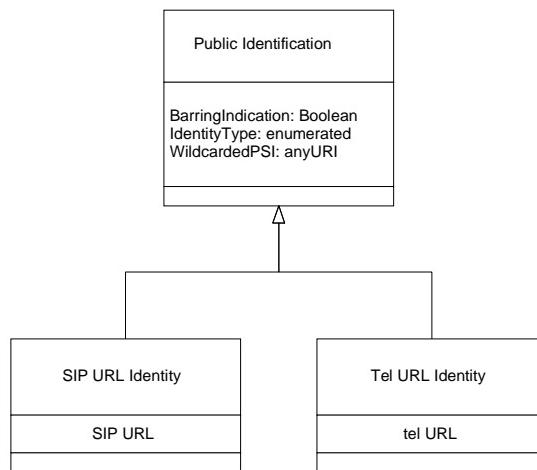


Figure B.2.1.1: Public Identification

Public Identification class can contain either SIP URL Identity, i.e. SIP URL, or Tel URL Identity class, i.e. tel URL.

The attribute BarringIndication is of type Boolean. If it is absent, or if it is present and set to FALSE, the S-CSCF shall not restrict the use of that public user identity in any IMS communications. If it is present and set to TRUE, the S-CSCF shall prevent that public identity from being used in any IMS communication except registrations and re-registrations, as specified in 3GPP TS 24.229 [8].

The attribute IdentityType indicates if the identity is a Public User Identity, a distinct Public Service Identity or a Public Service Identity matching a Wildcarded Public Service Identity. If the identity type is not present, it is assumed to be Public User Identity.

The attribute WildcardedPSI shall be present and contain the Wildcarded Public Service Identity that matched the Public Service Identity if the identity is a Public Service Identity matching a Wildcarded Public Service Identity. This Wildcarded Public Service identity shall be sent as stored in the HSS, that is including the delimiter described in 3GPP TS 23.003 [17].

B.2.2 Initial Filter Criteria

The following picture gives an outline of the UML model of Initial Filter Criteria class: